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Special Section

Environment 2.0

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Ernest Edmonds, Transactions Editor

We are pleased to present this collection of Leonardo Transactions papers documenting and reflecting on the development of the “Environment 2.0” research agenda and projects staged at the FutureEverything festival (formerly Futuresonic) that tested experimental approaches to participatory mass observation and citizen science. Environment 2.0 was initiated in 2006 by FutureEverything and Lancaster University to explore contributions to the sustainability of the way we live our lives, and how locative arts and mapping combined with global information-sharing creates an unprecedented capacity for participatory mass observation of the environment and climate.

PARTICIPATORY MASS OBSERVATION AND CITIZEN SCIENCE

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Abstract

The authors outline and reflect upon a new research agenda on participatory mass observation and citizen science as an introduction to the 3 project outlines in this special section of *Transactions*.

Keywords: Mass Participation, Locative Media, Citizen Science, Climate, Biodiversity, Environment, FutureEverything.



Fig. 1. Natural Fuse at Environment 2.0 / Futuresonic 2009. (Photo © WeAreTAPE)

Fresh enquiry into how humanity can together know and care for the environment reveals an experimental re-assembling of how science, art and their publics might creatively work together. At a time when many of us live in fear of environmental degradation, such innovation with new forms of knowledge production, artistic expression and public engagement highlights the array of existing expertise in environmental issues such as climate change and biodiversity loss. Importantly, such convergence also demonstrates close connection between knowledge production and the role of democratic participation in an increasingly expert-driven society, a conundrum which finds expression in two areas we explore in this paper:

1. Participatory art and design that engage with locative media, social networking and mass participation to collaboratively produce, share and make sense of information

about natural, built and social environments

2. The concept and practice of 'Citizen Science'—an expanding field experimenting with alternative models of 'public' knowledge production and democracy.

The 3 projects we document here are testimony to the fact that our appreciation of the relationship between producing environmental knowledge and ways of doing democracy can be reinvigorated by combining insights from public participants, digital artist-designers and natural and social scientists. The 3 projects were however experiments in social, technological and political innovations conceived and put into practice over a very short timeframe. In our contribution to *Transactions*, descriptive sections which focus on experimental design and practice are followed with reflections about how the challenges we encountered are inspiring new longer-term projects. The envisaged activity will explore the co-development of locative technologies and novel forms of community participation for environmental monitoring.



Fig. 2. Jon Cohrs and Andrea Polli at Environment 2.0 / Futuresonic 2009. (Photo © WeAreTAPE)

Background

As part of the acclaimed FutureEverything festival (previously Futuresonic) a broad ranging investigation into the potential of 'Environment 2.0' delivered a number of artworks (see Figs. 1-5). Our research investigates how participatory observation and mapping using locative technologies in combination with global information sharing creates an unprecedented capacity for participatory mass observation of the environment and climate. As such, we believe it can bring a fresh approach to the field of 'citizen science.'

One of our early criticisms of many Locative Arts projects concerned the way their use of digital mapping techniques (e.g. GIS) often reduced the richness of embodied experience to a point

within cartographic space. Our interest in this period (2003-2006) was in artworks that look beyond the reductive understanding of location to explore context, co-location and human experientially informed interpretation [5,6,7]. This interest then grew into exploring how refreshed and embodied forms of participatory observation and mapping drew upon and enhanced the use of social networking technologies in combination with new forms of visualising and making sense of media-rich environments. We asked 'How could these innovations, occurring at the intersection of art and science, inspire novel forms of public engagement in the environment, at a time when the impacts of climate change and their uneven global distribution are becoming ever more dramatically evident?'

We are thus particularly interested in the nature of participation and in the range of motivations, expectations and forms of sense-making for engaged individuals and groups.

At the last Futuresonic festival, we raised and debated a whole range of research questions:

- How can locative technologies foster and enhance the engagement of various publics in atmospheric, climatic and biodiversity monitoring?
- What new synergies can be developed between natural and social scientists and artist-designers working with mass observation initiatives?
- What potential differences and disconnections between different disciplinary communities may need to be worked with?
- What will it mean for scientists and 'citizens' to produce new forms of technologically mediated civic collective agency, responsibility and commitment?



Fig. 3. Urban Prospecting at Environment 2.0 / Futuresonic 2009. (Photo © WeAreTAPE)



Fig. 4. Biotagging at Environment 2.0 / Futuresonic 2009. (Photo © WeAreTAPE)

Refreshing 'Citizen Science' and 'Locative Media' through Inter-disciplinary Collaboration

Several factors have combined to support and enhance our research. The projects are timely in that they coincide with a public and institutional desire to find novel ways of engaging citizens in environmental projects. We have thus benefited from partnerships which have allowed for much-needed cross-fertilization between digital art/locative media and data producing 'citizen science' initiatives. 'Citizen Science' [8] tends to refer to a wide range of projects – from those which seek to 'educate' the public to those which actively incorporate public knowledge, commitments and concerns into science and science policy [3]. One model of citizen engagement currently dominating the institutional imagination is of a need to harness citizen enthusiasm and labour to produce data. We thus ask ourselves how may the combination of insights from artist-designers and natural and social scientists change the status and indeed the experience of engaged citizens beyond the denomination of mere 'data drones'? Some of our recent research, for example, describes ways in which citizen participation might take quite idiosyncratic, sensorial and embodied forms [1,2]. As such, it may become meaningless to reduce all the cognitive and sensorial faculties applied when knowing the environment to mere quantifiable units of data alone. And it is perhaps here that interdisciplinary collaboration becomes most relevant, allowing us to be more inventive with people and with technology in ways which seek to capitalize on rather than exclude the idiosyncratic and less tangible dimensions of environmental 'monitoring'. In this way the conventional parameters of what is expected of public participation and what counts as monitoring can be potentially shifted.

Development of the Projects

The projects we document here build upon conversations initiated between Drew Hemment and senior scientists at the Hadley Centre, Met Office and the Natural History Museum (NHM). These institutions are currently exploring novel ways to engage the public in generating and also understanding climate and biodiversity data. Furthermore, a 10-year research collaboration between social scientists at Lancaster University and biodiversity scientists at the NHM has provided us with new expertise to develop projects which contribute to the NHM's established programme and international centre for 'citizen science'.

We organised a preliminary workshop at Lancaster University in March 2009 involving artists (Christian Nold, Alfie Dennen, Yara El-Sherbini and Drew Hemment), the curators and researchers at Lancaster University and FutureEverything, scientists from the Natural History Museum and the Met Office, plus other invited participants from the North and East Yorkshire Ecological Data Centre, Transition City Manchester, and one further representative from OPAL (Open Air Laboratories Network) based in Preston. We divided participants into two brainstorming groups, one focussing on ideas for possible innovative projects on biodiversity and the other on climate science. The specific interests brought to the table by the Met Office and the NHM were the Urban Heat Island (UHI) phenomenon and biodiversity, respectively. Given that the UHI can also impact on biodiversity, we decided that the Manchester UHI would provide a reference point for all of the projects. Public participation in biodiversity and climate monitoring has a long history going back to the late 19th Century. And yet few initiatives, if any, have engaged artist-designers to find ways of moving beyond the conventional methods of environmental mapping and monitoring.

In an extremely short timeframe, we collectively conceived three trial projects *Climate Bubbles*, *Biotagging* and *100 Years of Climate Change* and delivered these at the Futuresonic 2009 festival in May. At the festival we staged an *Environment 2.0 Open Lab* unconference to evaluate the project and to explore ways forward for mass participation projects on the environment, biodiversity and climate.

The question we explored at the Open Lab was "How can we best design mass participation and citizen science pro-

jects?" It identified a number of design signposts:

- **Simplicity**—often the most complex plans and ideas only work if worked-up into simple form
- **Coherency**—engagement requires clear meaning sharing and reason for taking part
- **Reciprocity**—the data produced needs to be exchangeable and individual contributions recognised
- **Participatory design**—what are the parameters of the projects if they are designed in participatory way
- **Open to the unexpected**—room for the uninvited/underdesigned and room for failure are all good
- **Thinking creatively about MASS**—what does it mean and is it enough for it to have the potential to scale up
- **Eco-phenomenology**—focus on new ways of encountering and mapping the environment that are bottom-up
- **Usefulness**—how to define useful/real, and who is defining this
- **Collective reflection**—ensure it is built into project practice.



Fig. 5. Akousmaflore at Environment 2.0 / Futuresonic 2009. (Photo © WeAreTAPE)

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